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ABSTRACT

Leadership researchers and theorists alike have come to recognize that the critical tasks of senior level leaders are quite different from the critical leadership tasks of individuals occupying lower level leadership positions. Departing from the bulk of prior research on individual differences in leadership effectiveness which focused on differences in managerial "style" or on component decision making processes, this study explores conceptual capability as a predictor of leadership success. Leader differences in conceptual capacity were examined in a sample of 44 war college students. Replicating earlier findings, war college students demonstrated a range of conceptual capability, despite the fact that they had all been highly successful leaders at the direct leadership level. Interview based ratings of breadth of perspective and conceptual work capacity were demonstrated to have acceptable levels of interrater reliability. Despite clear conceptual and methodological differences, the two measures of conceptual capability were found to be correlated. Student's conceptual work capacity, but not their breadth of perspective, was found to be positively related to war college instructor ratings of students' strategic thinking skill but not their peer popularity. (Contains 31 references.) (RB)

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ED 395 241

An Exploration of Leader Conceptual Capability

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Leader differences in conceptual capacity were examined in a sample of 44 war college students. Replicating earlier findings (Lewis & Jacobs, 1992), war college students demonstrated a range of conceptual capability, despite the fact that they had all been highly successful leaders at the direct leadership level. Interview based ratings of breadth of perspective (Kegan, 1994) and conceptual work capacity (Jaques, 1989) were demonstrated to have acceptable levels of interrater reliability. Despite clear conceptual and methodological differences, the two measures of conceptual capability were found to be correlated ($r = .46$, $p < .01$). Students' conceptual work capacity, but not their breadth of perspective, was found to be positively related to war college instructor ratings of students' strategic thinking skill but not their peer popularity.

Leadership researchers and theorists alike have come to recognize that the critical tasks of senior level leaders are quite different from the critical leadership tasks of individuals occupying lower level leadership positions. Forced to operate in a complex and rapidly changing environment, senior leaders must be able to develop a comprehensive conceptual understanding of their work environment and the world at large. It is this broad understanding which allows them to shape rather than react to unfolding events through the establishment of policy, standards, and climate, and to be able to provide effective simultaneous coordination of diverse but interrelated organizational functions. What appears to be central to success at these higher levels of organizational leadership is the capacity to cognitively structure relevant information in a broad, objective, and complex fashion. Unfortunately, the bulk of prior research on individual differences in leader effectiveness has focused either on differences in managerial "style" or on component decision making processes (Landy & Trumbo, 1980; Yukl & Van Fleet, 1993).

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Common experience suggests that one can be an effective leader using a variety of personality styles. Still, clear differences in leader effectiveness are ubiquitous (c.f., Hogan, Curphy & Hogan, 1994), and recent reviews suggest that one of the strongest predictors of leader success is conceptual capability (Fleishman, Zaccaro & Mumford, 1991; Mumford & Connelly, 1991). It was to such differences in conceptual capability that the current research was directed.

The present investigation of the conceptual capability of mid level military officers was grounded in two interrelated assumptions about organizational leadership. The first is that leadership task requirements in complex, hierarchically structured organizations show progressive increases in complexity as one moves from lower to higher organizational levels (Jaques, 1976; Katz & Kahn, 1966; Mintzberg, 1973; Simon, 1977). The second major assumption is that successful performance of the critical leadership tasks of each successive organizational level depends upon the leader's conceptual capacity (Jaques & Clement, 1991, Lewis & Jacobs, 1992). What is needed now is research which further clarifies both the nature of successive levels of work complexity and the nature of successive shifts in the individual capability needed to do that work. The present project focused on the latter, the nature of individual work capability, in particular, certain broad cognitive aspects of that capability.

The Conceptual Requirements of Managerial Work

By far the most comprehensive and integrative view of the way in which managerial work increases in complexity as one proceeds up the organizational hierarchy is provided by Elliott Jaques and his colleagues (Jacobs & Jaques, 1987, 1990; Jaques, 1989; Jaques & Clement, 1991). The strength of this body of work comes from an integration of research into the nature of managerial work with a comprehensive theory of organizational hierarchy. Drawing on the earlier work of Jaques (1976), these authors point out that in requisitely configured organizations (those having neither too few nor too many organizational levels or layers) " . . . each successively higher level poses new conceptual skill requirements, largely based on the need to understand the causal factors which must be considered in making decisions" (Jacobs & Jaques, 1991). For example, in contrast to managerial work at the level of "direct" or supervisory leadership, at middle and upper organizational levels managers are much less involved in the direct supervision of subordinates. Instead, their efforts entail a greater reliance upon indirect influence through the management of climate, policy, and resource allocation. Together with the need for coordination of multiple subordinate units and multiple, simultaneous activities over extended periods of time, the conceptual requirements placed on managers at middle and upper organizational levels are thought to be qualitatively different from the requirements at lower levels.

That the shift from direct to indirect leadership likely entails significant qualitative increases in conceptual requirements has several important implications. One is that success as a direct leader or manager may not be a particularly good predictor of success as an indirect leader or manager. Another implication is that the burgeoning literature on

managerial "derailment" (Hogan, Raskin, & Fazzini, 1990; McCall & Lombardo, 1983; McCall, Lombardo, & Morrison, 1988) may be placing too little emphasis on conceptual capability in its search for derailment factors. While clearly important, many managers and leaders may fail not primarily due to their personality characteristics but because they find themselves in over their heads conceptually and can't, therefore, "see" how to add value to the organization at their level.

To summarize, a major thrust of this brief review of the theoretical and empirical literature is that individual differences in conceptual capacity are highly relevant to leader effectiveness, particularly at upper organizational levels. It was these differences in individual capacity which were the focus of the current research project.

METHOD

Overview

The conceptual capacity of an opportunity sample of 44 war college students was assessed during the first six months of their attendance at either the U.S. Army War College (N = 38) or the Industrial College of the Armed Forces (N = 6). Each participant was assessed for conceptual capacity using two interview-based methods: a) a variation of Robert Kegan's subject/object interview (Lahey et al., 1988), and b) a variation of Gillian Stamp's procedure for the assessment of conceptual work capacity (Stamp, 1986). All assessments were conducted by the principal investigator (Philip Lewis) and interrater reliabilities were assessed by having up to 20 of each assessment interview independently scored by subject matter experts. Finally, for war college subjects enrolled in one of six seminar groups, instructor ratings of strategic thinking skill, general officer potential, and peer popularity were obtained (N = 37).

Measures

Breadth of perspective interview. Breadth of perspective was assessed using an interview procedure developed by Robert Kegan (1982) and his colleagues at Harvard University (Lahey, et al., 1988). Kegan's interview protocol was modified slightly for use in the present research by focusing on the interviewee's current and most recent work roles. Interviewees were asked to discuss instances at work pertaining to the following words or phrases: angry, anxious/nervous, success, strong stand/conviction, sad, torn, moved/touched, lost something, change, and important to me. After a description of a work incident was obtained, the interviewer asked a series of "why" questions (e.g., "Why did you feel sad?") designed to elicit the frame of reference used by the interviewee in attaching meaning to the experience being described. Thus, the focus of the interview was not on the "content" of the incident but instead on the way in which the interviewee made sense of the incident (i.e, the "structure" of the interviewee's thought). It was the level of self-differentiation expressed in the structuring of the meaning of the incident that was subsequently scored. "Limit testing" questions were used by the interviewer to insure that the interviewee had expressed a frame

of reference for attaching meaning to the incident that he or she could not subordinate to a broader frame of reference. When the interviewee clearly articulated his or her broadest frame of reference for attaching meaning to a personally relevant event, that frame of reference was scored at one of five stages of the differentiation of self or at a transition point between two stages. One of four successive transition points between any two stages were scored when features of both stages were present.

Based on prior research with war college students (see Lewis & Jacobs, 1992), it was expected that most, if not all, war college students would demonstrate meaning making structures at Kegan's fourth or fifth stages (labeled stages 3 and 4, since Kegan's first stage is labeled stage 0) or in transition between them. As defined by Kegan (1982), the operative frame of reference for individuals at his fourth stage ("stage 3" - interpersonalism) always includes as part of one's own frame of reference another, external frame. These two perspectives are cognitively joined and are taken simultaneously (e.g., my thinking about myself in terms of how I think someone else is thinking about me). In contrast, individuals at Kegan's fifth stage ("stage 4 - institutional") attach meaning to their experiences by using frames of reference that transcend shared expectations. These individuals demonstrate the capacity to apply independently constructed values or standards to their jointly constructed experiences.

Conceptual work capacity interview. Gillian Stamp, a former colleague of Elliott Jaques at Brunel University in London, developed a procedure for assessing an individual's cognitive capacity to perform complex managerial work. This assessment procedure, termed "Career Path Appreciation" (CPA) by Stamp (1986), has its conceptual roots in Jaques' theories about the nature of work complexity in bureaucratic organizations (Jaques, 1976; 1989). Jaques identified eight levels of work complexity, which he termed "strata." Corresponding with each of these strata of work complexity, Jaques identified discrete levels of individual conceptual capacity for processing that complexity. Of most relevance to the present research are the levels of conceptual processing considered by Jaques to be requisite for the recent and future leadership demands of mid career military officers. According to Jaques (1989), Company command is at organizational stratum II, Battalion command at organizational stratum III, Brigade command at organizational stratum IV, and Division command at organizational stratum V. The levels of information processing considered requisite for each leadership stratum are level II, cumulative processing, where data are accumulated to support or refute various propositions; level III, serial processing, where information can be processed in terms of linear, cause and effect sequences; level IV, parallel processing, where multiple linear sequences can be processed simultaneously, and level V, conceptual processing, where data are organized into discrete abstract concepts or models that subsume linear and parallel organizational and extra-organizational processes. The CPA was designed by Stamp to detect these levels of capacity.

The CPA assessment interview is divided into three parts: phrase cards, symbol sort and work history. These will now be briefly described. The first part of the interview centers upon the interviewee's reactions to nine sets of phrase cards. The interviewee is

invited to read the phrases typed on six three by five cards and decide for each set of cards which phrase is most like and which is least like how he/she prefers to approach a piece of work. Each phrase is thought by Stamp to reflect most closely the thinking process characteristic of one of six of Jaques' levels of conceptual work capacity. However, level of conceptual work capacity is not determined solely by the interviewee's choice of most preferred phrase. The interviewee is invited by the interviewer to elaborate on or explain his/her preferences. In determining conceptual level, the way in which the phrase is understood by the interviewee is given as much weight as the presumed conceptual level of the phrase chosen. In addition, the way in which the interviewee goes about looking at the six phrases (sequentially, all at the same time, etc.) and interrelating them (if at all) is also used in making a judgement about conceptual level.

The second part of the CPA interview centers upon a concept formation task (Bruner, 1966) consisting of symbol cards which the interviewee is asked to sort one at a time into four piles, trying to discover in the process an a priori sorting rule. As the subject proceeds through the sorting task, the interviewer indicates whether each card has been correctly sorted into one of three pre-labeled piles and gives no feedback if the card is sorted into an unlabeled fourth pile. The interviewee is told that the object of the task is to discover the interviewer's sorting rule and to sort ten consecutive cards into the correct piles. Each sorting card contains from one to three geometrical symbols which vary by number, size, shape, and color. The correct solution involves jointly using two of the four variables. By observing the interviewee's sorting decisions, the interviewer can infer the way in which the interviewee goes about testing complex hypotheses. When the interviewee has solved the task (or it is clear he or she will not be able to do so), the interviewer asks the interviewee to explain how they went about trying to solve the task. Because the task requires the use of hypothetical reasoning and the formulation and testing of complex hypotheses, individuals who have not yet reached Jaques' level III of conceptual capacity are typically not capable of solving it. Those at Jaques level III often solve the task using a trial and error approach. Those who are at Jaques level IV or higher are able to articulate a systematic problem solving strategy which makes use of the blank (unlabeled) pile in hypothesis testing.

The third and final portion of the CPA interview is a work history where the interviewee is asked to describe the major work positions he/she has held, starting with the earliest major work position. The complexity and maximum time span of the work done in each position is noted, and the interviewer asks questions to assess the interviewee's level of comfort with that level of work complexity at the time the position was held. Because conceptual work capacity has been found to increase at a typical rate (Stamp, 1988), it is thought to be possible to extrapolate from past work capacity to current (and future) work capacity using progression curves developed by Jaques (Jaques, 1989). Finally the interviewee is asked about his or her current time horizon, since Jaques (1976, 1989) has found time horizon to be correlated with conceptual work capacity.

On the basis of responses to all three parts of the CPA interview, an overall score is assigned which reflects the interviewee's current conceptual work capacity expressed in terms

of Jaques' levels (I through VI). Within each level of work capacity, distinctions among high, medium, and low expressions of that level are also made. Stamp (1986) did not report interrater reliabilities for CPA derived scores. However, in a recent study conducted by the current author (Lewis, 1993) interrater reliability for 57 war college students was found to be .81. Given the "quasi-clinical" nature of the assessment interview, and the fact that only one of the two scorers (T.O. Jacobs) had face-to-face contact with those assessed (Lewis assigned a score from a typed record of the interview), a Pearson correlation of .81 was considered an acceptable level of interrater agreement.

Instructor ratings of strategic thinking skill and general officer potential. To provide construct validity for each of the conceptual capability measures used in the present research project, war college instructor ratings of study participants were obtained. The peer comparison procedure developed by McAnulty (1990) was modified for use in the present research, because it forces respondents to make distinctions among all individuals being rated. An additional advantage of the paired comparison procedure is that it is less susceptible to rater bias than are dimensional rating procedures (Saal, Downey, & Lahey, 1980). In particular, by forcing raters to make comparisons of each pair of students, indicating which is superior on the attribute being rated, leniency bias is eliminated.

Use of war college instructors to rate strategic thinking skill was thought to be appropriate for several reasons. First, war college instructors have considerable first-hand knowledge of how their students express ideas about complex issues. The principle educational method at both the U.S. Army War College and the Industrial College of the Armed Forces is discussion of issues in small (N=16) interactive seminar groups, where the seminar members are responsible for presenting and debating a variety of complex social, military, and political issues. Topics and instructors change approximately every eight weeks, but the groups typically retain their membership for half the academic year. Thus, more than one instructor has in-depth experience with the participants in any given seminar group, experience of the sort that should make it possible for the instructors to confidently rate their students' thinking skills.

Subjects

Subjects were 44 resident students at either the U.S. Army War College (N=38) or the Industrial College of the Armed Forces (N =6). One GS 14 DoD civilian participated; the remainder of the participants were mid-career military officers at lieutenant colonel or colonel ranks (or equivalent). There were two U.S. Coast Guard officers, one U.S. Marine, four U.S. Air Force officers, and one Army National Guard officer. The remainder were U.S. Army officers. Selection as a military officer for a war college resident course is highly competitive, and all participants are considered to be within the top 10% in terms of their past performance as military officers. With only a few exceptions, all war college officers have been or will shortly be promoted to the rank of full colonel or its equivalent, and virtually all have had a successful battalion command or its equivalent. In short, war college students are a highly select group.

Procedure

The 44 participants in the present study were all invited to participate by seminar group instructors who were familiar with the present investigator's research into leader capability. Of the six instructors who recruited participants, five were at the U.S. Army War College (USAWC), and one at the Industrial College of the Armed Forces (ICAF). In all, approximately 78 war college students were invited to participate. It is not known how the 44 study participants differed from the 34 who chose not to participate. The instructors who recruited participants stressed that participants would receive feedback from the investigator regarding personal attributes related to leadership, so it is possible that the participants were more interested in gaining additional self knowledge than were non participants. In any event, it can not be assumed that the participants in the present study were representative of military officers who attend senior service schools.

War College students who volunteered to participate were contacted by phone and a 90 minute interview scheduled. Interviews were scheduled in empty classroom or office space on the war college campuses. When study participants arrived for the interview, the purposes of the research were explained and written informed consent obtained. All participants then participated in the breadth of perspective interview. At the end of the interview they were given brief and general feedback about their interview performance and were scheduled for a second 90 minute interview, typically within two weeks of their initial interview. At the second session, the CPA interview was conducted. Finally, each participant was again given brief and general feedback about their performance and was invited to ask questions about the research project. CPA interviews were never able to be scheduled for three study participants who missed or cancelled interview appointments and never rescheduled.

Thirty-three of the 38 USAWC participants were members of one of five seminar groups. The current instructors of those five seminars were asked to provide instructor ratings of three attributes of eight of the fourteen U.S. members of their seminar group, including all of the military study participants who were group members. There were from five to eight study participants in each of these six seminar groups. To standardize the instructor rating process, where there were less than eight study participants in a seminar group, other members of the seminar group were randomly selected to be included in the ratings, though their ratings were not used in the present research. In addition, another instructor from each of the five USAWC seminar groups was recruited to provide the same paired comparison ratings of these 33 study participants. Five study participants from one of three other USAWC seminar groups were not rated by their instructors. All six participants from the Industrial College of the Armed Forces (ICAF) were rated by an instructor familiar with the present research project (B. Michelson). Because this was an elective seminar, there was no other instructor who had this particular group of students, so a second set of instructor ratings was not obtained for these students. All instructors were asked to make judgements about the relative capability of eight members of their seminar group with respect to "strategic thinking skill" and "general officer potential." No definitions of these two

attributes were given to the instructors. To provide a measure with some hypothesized divergent validity for the conceptual capacity measures, instructors were also asked to rate each of the eight seminar group members' popularity with their peers using the same paired comparison procedure.

Interrater Reliabilities

All interviews were audiotaped and the tapes were later converted to typescripts for subsequent scoring. Twenty breadth of perspective interview transcripts were selected at random and forwarded to Dr. Lisa Lahey for independent scoring. Dr. Lahey is the first author of the scoring guide that was used to score these interviews (Lahey et al., 1988) and can be considered an expert in the scoring of the breadth of perspective interview. Lahey determined that six of these interviews could not be definitively scored, and the present investigator concluded that an additional interview from among the twenty could not be definitively scored by him. For the thirteen that both raters definitively scored, the Pearson correlation between the present investigator's and Lahey's scores was .92.

Although seven of the twenty interviews could not be fully scored, six were considered partially scorable by both raters. That is, each subject's statements from the interview were judged to be indicative of a minimum breadth of perspective, even though it was judged that the individual's maximum capacity had not been fully tested. Here there was additional agreement between Lahey and the present investigator. For four of the seven, both raters agreed that the student was at minimum in transition between interpersonalism and institutionalism. For another, Lewis considered the individual to be fully at the self-authoring, institutional stage while Lahey scored the interview as showing a predominance of the institutional stage but still possibly showing that the student was sometimes subject to taking a more narrow, interpersonal perspective. The sixth interview was judged entirely unscorable by Lewis, while Lahey judged that this student was at minimum well into the transition from interpersonalism to institutionalism. In all, 36 of the 44 breadth of perspective interviews were considered fully scorable by the present investigator and will be included in the data analyses reported below.

T.O. Jacobs independently scored eleven of the 41 CPA interviews. For these eleven interviews both Jacobs and Lewis scored the CPA performance for each subject from a typed record of the phrases portion of the interview, a computer generated record of each subject's symbol sorts, and the interviewer's notes on the work history. The interrater agreement between Jacobs' scores of current conceptual level and those of the present investigator was .81, using a Pearson correlation coefficient. This level of interrater agreement was considered acceptable and was identical to that obtained in a subsequent war college study using the scores from 57 USAWC students in the class of 1993 (Lewis, 1993).

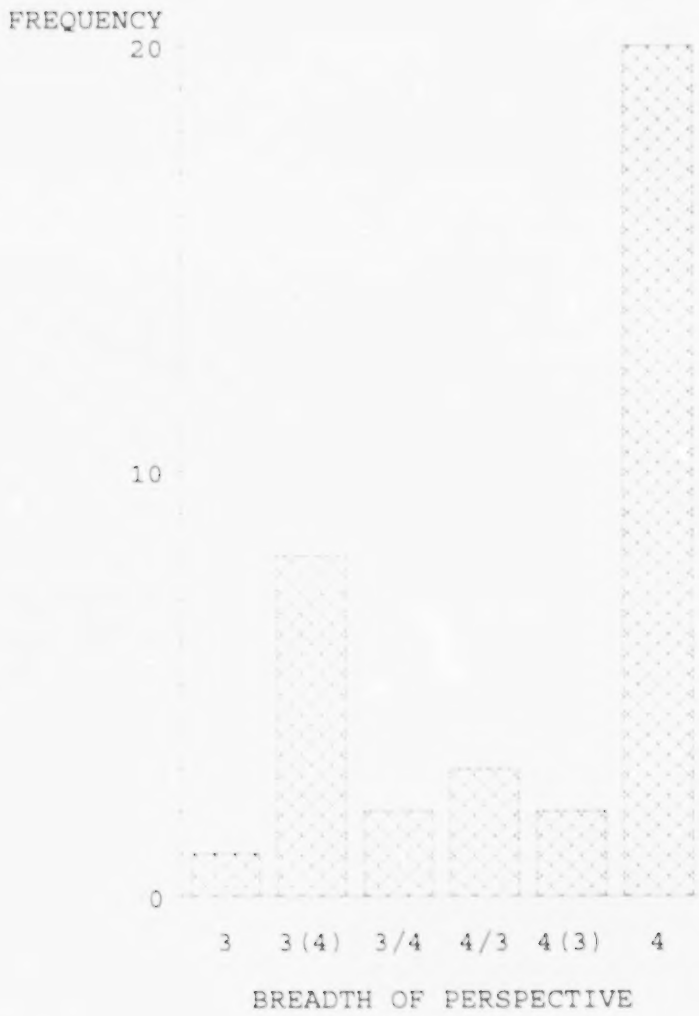
RESULTS

Breadth of Perspective

In previous research by the present author (Lewis & Jacobs, 1992), it was found that half (50%) of the 28 war college students studied demonstrated the capacity to fully exercise a personally authored perspective on key events in their work lives. The remaining students were either still at Kegan's interpersonalism stage (Kegan, 1982) or in transition from interpersonalism to Kegan's self-authored stage (institutionalism). The present research afforded another look at the breadth of perspective of an additional war college sample, again using a modification of the Kegan interview (Lahey et al., 1988). Results were generally similar to those of the previous research. Of the 36 scorable interviews, 20 (56%) were scored by the present investigator as demonstrating full achievement of Kegan's institutional stage. One individual was scored at Kegan's interpersonal stage and 15 (42%) were in transition from interpersonalism to institutionalism (from Kegan's stage 3 to Kegan's stage 4). As in the previous research, no war college students demonstrated the narrow self-interested perspective of Kegan's imperial stage (stage 2). Similarly, no student in either sample showed signs of beginning a transition to Kegan's final developmental stage, the interindividual stage (stage 5). This distribution of breadth of perspective scores is consistent with a view of the military as demanding that officers transcend narrow self interest in the pursuit of broader, organizational goals. The narrowly "careerist" orientation of some individuals is viewed quite negatively in the military, and from a constructive/developmental perspective those officers who have a limited capacity to see their mission from the Army's perspective (those not fully at the interpersonal stage or higher) do not seem to have performed well enough to be selected for one of the war colleges. Of course, it is possible that a few such individuals are selected for resident War College study, but if there are any, they seem not to have volunteered for the present or previous research studies. The distribution of breadth of perspective scores is shown in Figure 1.

Even though over half of the study participants had achieved Kegan's institutional stage (stage 4), and none showed even vestiges of a narrow, self-interested perspective (Kegan's imperial stage, stage 2), it is nonetheless noteworthy that there were still a substantial proportion of War College students (42%) who had not yet developed the capacity to decenter from shared perspectives and operate from an entirely self-authored and self-directed point of view. Arguably (Lewis & Jacobs, 1992), the capacity to step back from and independently evaluate the perspectives offered by others or the organization itself is essential to the decision making requirements of higher level leadership positions. Forty-two percent of the present participants were judged not fully capable of exercising that level of independent judgement. This should make their potential contributions to the military at higher ranks following War College graduation problematical. Fortunately, all but one of these individuals was already in transition toward the stage characterized by independent judgement (stage 4). It might be argued, however, that the seven individuals scored at the transition labeled "3(4)" (see Figure 1) might have considerable difficulty quickly completing the transition. These individuals do not yet show any evidence of constructing their own,

Figure1. Distribution of Breadth of Perspective Scores



The designations 3(4), 3/4, 4/3, and 4(3) are transition points between stages 3 and 4

self-authored perspectives on their work. Instead, they have merely internalized the external expectation that they should do so. Unfortunately, they may well have consolidated a relatively stable developmental position, one supported by a military culture which, at upper ranks, puts a premium on independent decision making (Lucas & Markessini, 1993). These individuals may have learned how to "talk the talk" of independent thinking without being able to "walk the walk."

Conceptual Work Capacity

The second variable of interest in the present research was war college students' assessed conceptual work capacity (Jaques, 1976, 1989). According to Jaques, individuals differ in their capacity to conceptually grasp and manage complex managerial and leadership role responsibilities. Jaques (1976, 1989) claims to have identified a discrete number of these qualitatively distinct yet hierarchically ordered levels of conceptual capacity, levels which correspond to associated strata of work complexity. Individuals who are assigned work responsibilities at an organizational stratum for which they lack the requisite conceptual capacity will presumably find it difficult to successfully carry out the most complex (and often the most critical) requirements of their job. What is lacking in these individuals is not relevant knowledge or experience but the capacity to construct mental models of the work which match its complexity. In short, the individuals cannot "see" the work that they need to be doing, and often are observed to be trying to do the work of their subordinates (Lewis, in press).

In the present study, the conceptual capacity of an opportunity sample of 41 war college students was assessed using a variation of the CPA method developed by Stamp (1986). Of particular interest is the extent to which the conceptual work capacity of these individuals matches or exceeds the conceptual requirements of the leadership positions to which they can be expected to move after graduation from the war college. Virtually all of these war college students had completed successful battalion commands or an equivalent leadership position. According to Jaques (1989), battalion command is at the top of organizational stratum III in its complexity. Therefore, war college students would be expected to demonstrate a conceptual work capacity at or above level III. These students' next work assignments can be expected to be at organizational stratum IV (brigade command) or in support of brigade command or higher. Jaques' stratified systems theory predicts that to be successful in these subsequent positions, war college graduates will need to be able to conceptualize their work at level IV or higher. Findings from the present research were interesting in this regard. All 41 war college students who were assessed with the CPA were found to be at conceptual work capacity level III or higher. Of these 22% were determined to be functioning at level III with another 7% at the transition between level III and level IV. This 29% of the sample will presumably be marginal, at best, in their ability to conceptually grasp the work complexity of their future leadership positions, unless the demanding war college curriculum improves their level of capability (the impact of the war college experience on students' conceptual capability has never been directly assessed). Fortunately, 71% of the current sample demonstrated the capacity to grasp and master work complexity at

Jaques' level IV or above. Ten percent of these (N=8) had already moved beyond level IV in their conceptual capacity. These are the individuals who would be in the best position to move rapidly into division level positions upon their graduation from the war college. This distribution of conceptual work capacity scores is presented in Figure 2.

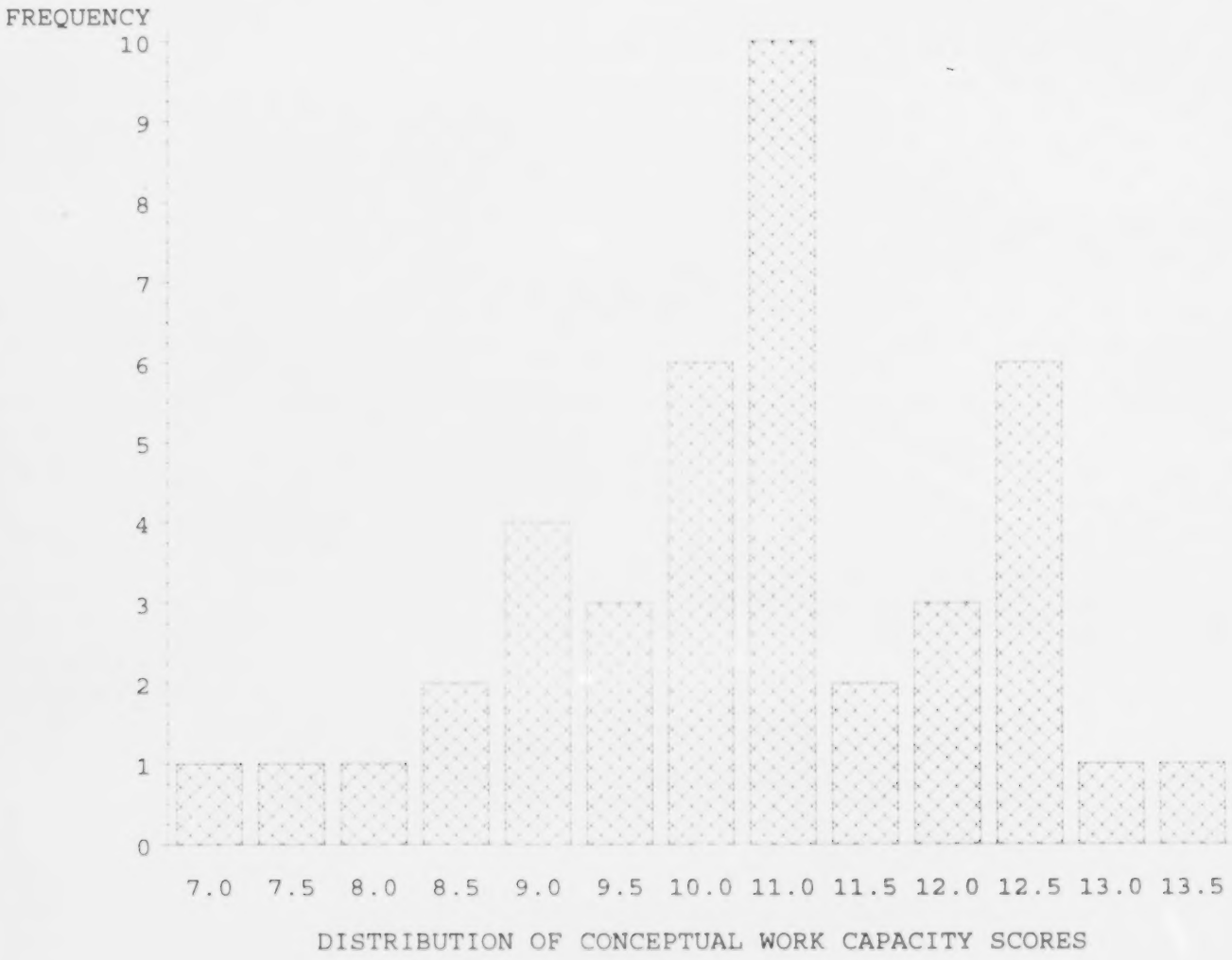
Relationship Between Breadth of Perspective and Conceptual Work Capacity

In previous research into the conceptual capability of war college students, a strong relationship between Kegan's breadth of perspective and Jaques' conceptual work capacity scores was demonstrated (Lewis & Jacobs, 1992). One purpose of the present investigation was determination of the replicability of that finding in a study which assessed the reliability of both assessments (in the previous research no reliability assessment of the CPA instrument was available). Accordingly, a Pearson product-moment correlation was calculated between breadth of perspective scores and conceptual work capacity scores for the 34 subjects who had valid scores on both assessments. The obtained correlation was .46. The scatter plot of this statistically significant relationship ($df = 32$, $p < .01$) is presented in Figure 3. Inspection of this plot suggests that the pattern of the relationship between the two variables is highly similar to that obtained in the previous research. As in the previous study, those participants who were found to have the most complex thinking processes (Jaques high level IV and level V) were almost all shown to have the capacity for independent thought. The reverse was not as clear cut. There were a number of independent thinkers (Kegan's stage 4) who did not demonstrate particularly high levels of conceptual work capacity. What is striking in these results is not only that the relationship between the two assessments was replicated but that the form of the relationship was also.

Instructor Ratings

Recall that 39 of the 44 participants in the present study were rated by one or two of their war college instructors for "strategic thinking skill," "general officer potential" and "peer popularity." These ratings were intended to provide evidence of the convergent and discriminant validity of the constructs underlying the interview assessments. For 33 of the 38 U.S. Army War College participants, instructor ratings were obtained from 2 instructors who had extensive contact with each participant. The level of agreement among the two sets of instructor ratings were calculated and were found to modest, at best. Pearson correlations of ratings of strategic thinking skill, general officer potential, and peer popularity between leadership instructors and military science instructors were .57, .23, and .37 respectively. Given these low levels of interrater agreement, relationships of instructor ratings with assessed conceptual work capacity were calculated separately for each type of instructor. For the leadership instructors (five at the U.S. Army war college and one at the Industrial College of the Armed Forces) the following Pearson correlations were obtained: The relationship between CPA assessed conceptual work capacity and instructor ratings of strategic thinking skill, general officer potential, and peer popularity were .39, .47, and .05 respectively. For the U.S. Army War College military science instructors the same correlations were .41, .27, and -.23. Together these correlations provide modest convergent

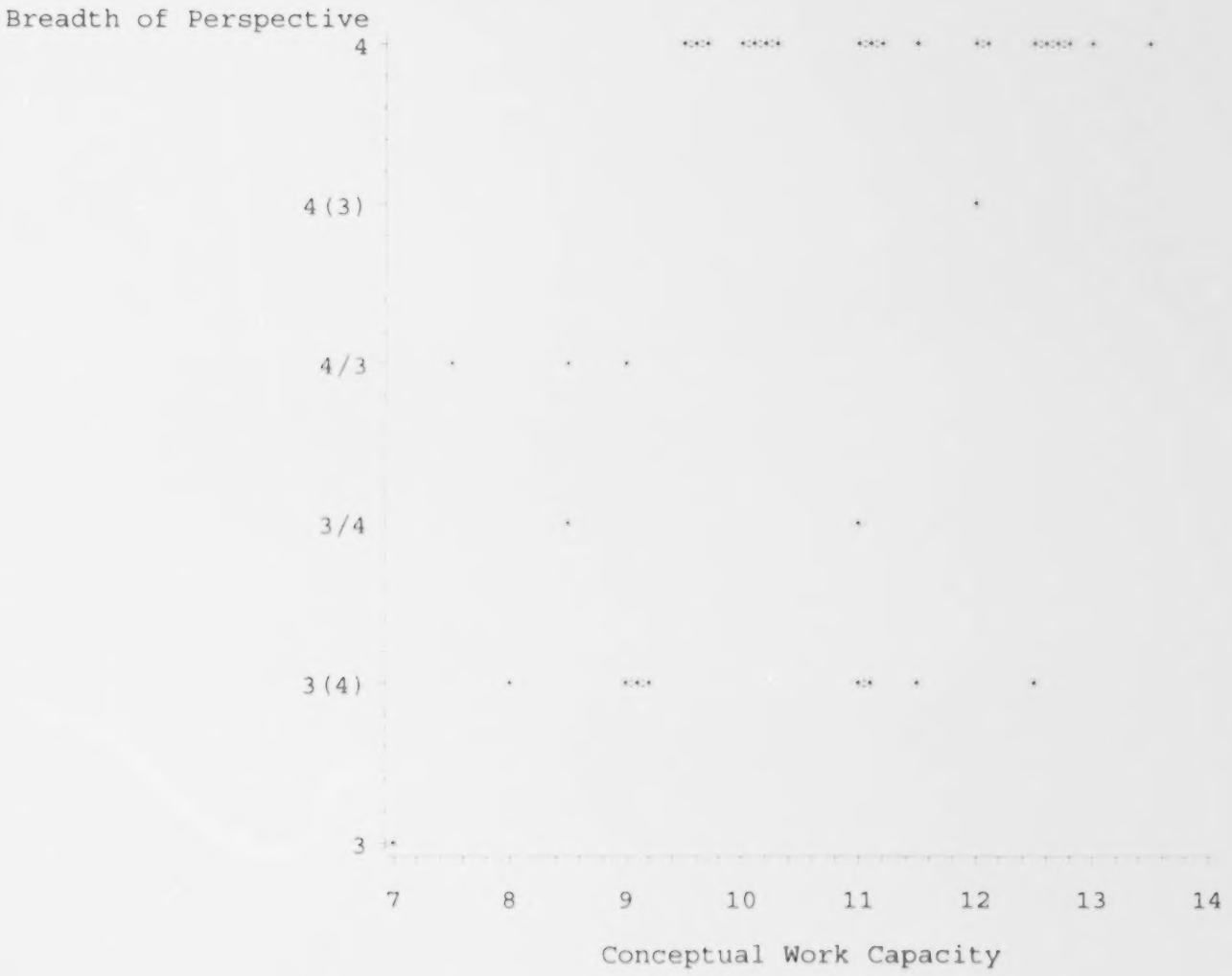
Figure 2. Distribution of CPA Scores



Scores of 7,8,& 9 are Level III; Scores of 10,11,& 12 are Level IV;
Scores of 13,14,& 15 are Level V; .5 Scores are Itermediate

FIGURE 3. Scatter Plot

Relationship Between Breadth of Perspective
and Conceptual Work Capacity Scores (N=34).



Scores of 7,8,& 9 are Level III; Scores of 10,11,& 12 are Level IV;
Scores of 13,14,& 15 are Level V; .5 Scores are Itermediate

validity for the CPA measure. Instructor rated strategic thinking skill, as demonstrated in war college seminar groups, and instructor rated general officer potential are both positively correlated with assessed conceptual level. At the same time, instructor rated peer popularity is not positively correlated with CPA assessed conceptual level. And although the above correlations are modest, it seems likely that the obtained relations were attenuated by the relatively low reliabilities of the measures. Interestingly, breadth of perspective (assessed using the Kegan interview) was uncorrelated with leadership instructors' ratings of strategic thinking skill ($r = .12$, $df=34$, $p > .05$). This finding is consistent with the earlier reported finding that being an independent thinker (Kegan's stage 4) does not necessarily predict that one will demonstrate a high level of conceptual work capability.

DISCUSSION OF RESULTS

In attempting to make sense of the present findings it should be emphasized that they were obtained from an highly usual group of individuals. All participants in the present project were war college students and were, with one exception, military officers. All had served with distinction in the military or federal government for approximately 20 years, and with two exceptions, all had completed successful tours as battalion commanders. All but two were male, and they occupied a narrow age cohort (42 to 49 years old). Finally, all had agreed to participate, without any external incentives, in a series of interviews that required about three hours of their time. In short, participants in the present study were very homogeneous; all were volunteers and all had highly similar socialization and employment histories. It is important, therefore, that the generality of the present findings be treated cautiously.

One major focus of the present effort was the attempt to replicate intriguing findings from the principal investigators's earlier war college research (cited in Lewis & Jacobs, 1992). In the main, the earlier findings were confirmed. Both of the methods used in the earlier research for assessing conceptual capacity were found to have acceptable levels of interrater agreement. And conceptual work capacity, as assessed using the CPA, was found to have some concurrent validity. In particular, CPA scores were significantly correlated with two different sets of instructors' ratings of participants' strategic thinking skill. As expected, conceptual work capacity was not significantly correlated with instructors' ratings of participants' popularity with their peers. These findings provide modest support for the convergent and discriminant validity of the CPA as a measure of conceptual work capacity in a military context. Also reconfirmed was the earlier finding that only about half of the war college students studied had fully advanced to Kegan's stage of full psychological independence (Kegan's "institutional" stage). Although the importance of attaining this level of perspective taking to senior leader success was not examined in the present study (all participants had been successful leaders in the past), Kegan and others (Drath, 1989; Kegan, 1994; Torbert, 1983) have made a strong case for its importance.

Given that there is at least modest evidence that the CPA assesses individuals' capacity to conceptualize varying levels of work complexity, the fact that nearly all the

individuals in the current study who showed high levels of conceptual work capacity were also found to be independent thinkers (Kegan's stage 4) is an intriguing finding. In trying to make sense of this finding, now replicated, it is useful to begin with a consideration of what was not demonstrated. First, it does not seem to be the case that achievement of Kegan's stage of psychological self definition (the "institutional stage") in and of itself conveys a high level of conceptual capacity. Inspection of Figure 3 indicates that there were eleven individuals who were judged to be independent thinkers (Kegan's stage 4) who were not found to be functioning at the highest conceptual levels (here defined as high level IV or higher on the CPA). Conversely, only two individuals who had not achieved Kegen's institutional stage were found to be conceptually complex, and one of these was at the last transition point in his development to the institutional stage. This individual used the self defined standards typical of Kegan's "institutional" stage in judging the meaning of his work encounters, but he also expressed concerns that he might be drawn back into judging events in terms of shared frames of reference (characteristic of Kegan's "interpersonal" stage). Interestingly, the other individual who was assessed at a high level of conceptual work capacity (at the transition between level IV and level V) was found to be functioning at the first scorable transition point beyond Kegan's interpersonal stage. This is the point where the individual has embraced the idea that he must be an independent thinker but has done so because he perceives that this is the Army's expectation of its officers. Hence, the "thinking for oneself" is structurally co-determined (what I think the Army thinks I should be doing) rather than being wholly self constructed (just thinking for myself).

Interpretation of this pattern of results remains difficult One possibility is that both Kegan's breadth of perspective and Jaques' conceptual work capacity, at the point where the individual is developing a self-authored perspective (Kegan's 5th stage) and conceptual modeling (Jaques' level V thought), are dependent on a common structural development. Kegan's fourth stage ("interpersonalism") requires the capacity to hold two perspectives in mind simultaneously (e.g., being able to think about yourself in terms of what someone else is thinking about you). Similarly, Jaques' level IV thought ("parallel processing") requires that the individual be able to simultaneously track two or more ongoing work processes and conceptualize their interconnections. Thus, developing beyond Kegan's interpersonalism and beyond Jaques' level IV thought requires the capacity to take a perspective on parallel or simultaneous thought processes. Jaques focuses on the shift to the use of conceptual models, which are no longer directly tied to concrete aspects of work. Kegan focuses on the use of self defined standards and values to prioritize shared perspectives and expectations. But both share the structural feature of developing the capacity to transcend parallel thought. This would explain the substantial positive correlation between CPA scores and Kegan stage level scores despite the strikingly different assessment methods used (see above for a description of the two assessment approaches). In short, it may be the case that self-defined individuals and high level thinkers process information in a fashion that is qualitatively different from the way individuals at developmentally lower levels process information. Only the content differs. Kegan focuses on the processing of complex self-relevant information, while Jaques' focuses on the processing of information about complex work environments. Because complex self-relevant information is nearly universal, while complex work environments are

not, this could explain why all individuals who are self defining are not necessarily conceptual thinkers with respect to their work environments.

One implication of the foregoing analysis is that it should be substantially easier to develop high levels of conceptual thinking in individuals who are already functioning at Kegan's stage 4 than it would be in individuals who have not yet reached that stage. Because these individuals have already developed patterns of thinking that are requisite for conceptual thought, they merely need to be placed in appropriately complex work environments for their conceptual work capacity to develop. Confirmation of this proposition would necessitate a comparison of the growth of conceptual work capacity of war college graduates who were independent thinkers versus those who were not. The former should show the most rapid gains in conceptual work capacity. Given the relatively short periods between promotion to full colonel and general officer ranks, this could prove to be a key component in the assessment and development of strategic leader potential at senior levels.

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